

The Use of Estuarine Resources by the American Alligator at GTM- NERR



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Outline

- Research Questions
- Preliminary findings from GTM-NERR
- Additional Activities and Side Projects
- What you can do to get involved

Research Questions

1. To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?
2. What are their movement patterns in estuarine habitats?
3. Do alligators form a functional link between Guana Lake and interior freshwater wetlands?

To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?

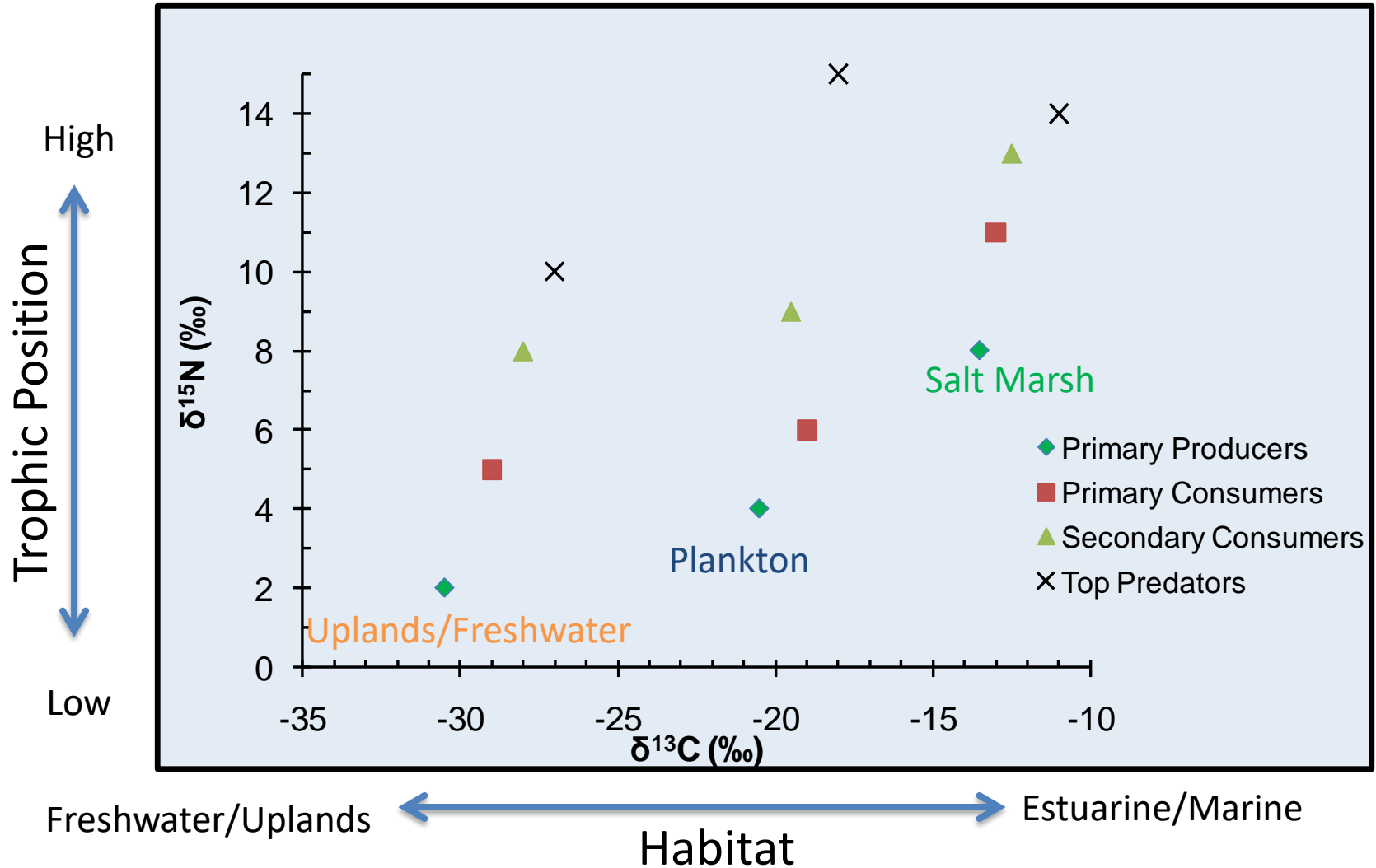
- Methods:
 - Stable Isotope Analysis (SIA)
 - Stomach Content Analysis (SCA)
 - GPS Telemetry



To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?

- SIA (stable isotope analysis):
 - Fingerprint of an animals dietary patterns and food habits
 - Measure ratio of HEAVY:LIGHT isotopes
 - $^{14}\text{C}:^{13}\text{C}$, $^{15}\text{N}:^{14}\text{N}$, etc.
 - Units per mil (‰), delta notation: $\delta^{13}\text{C}$, $\delta^{15}\text{N}$
 - Can provide information regarding:
 - habitat use, dietary patterns, specialization
 - trophic position, temporal patterns in diet

Theoretical Food Web

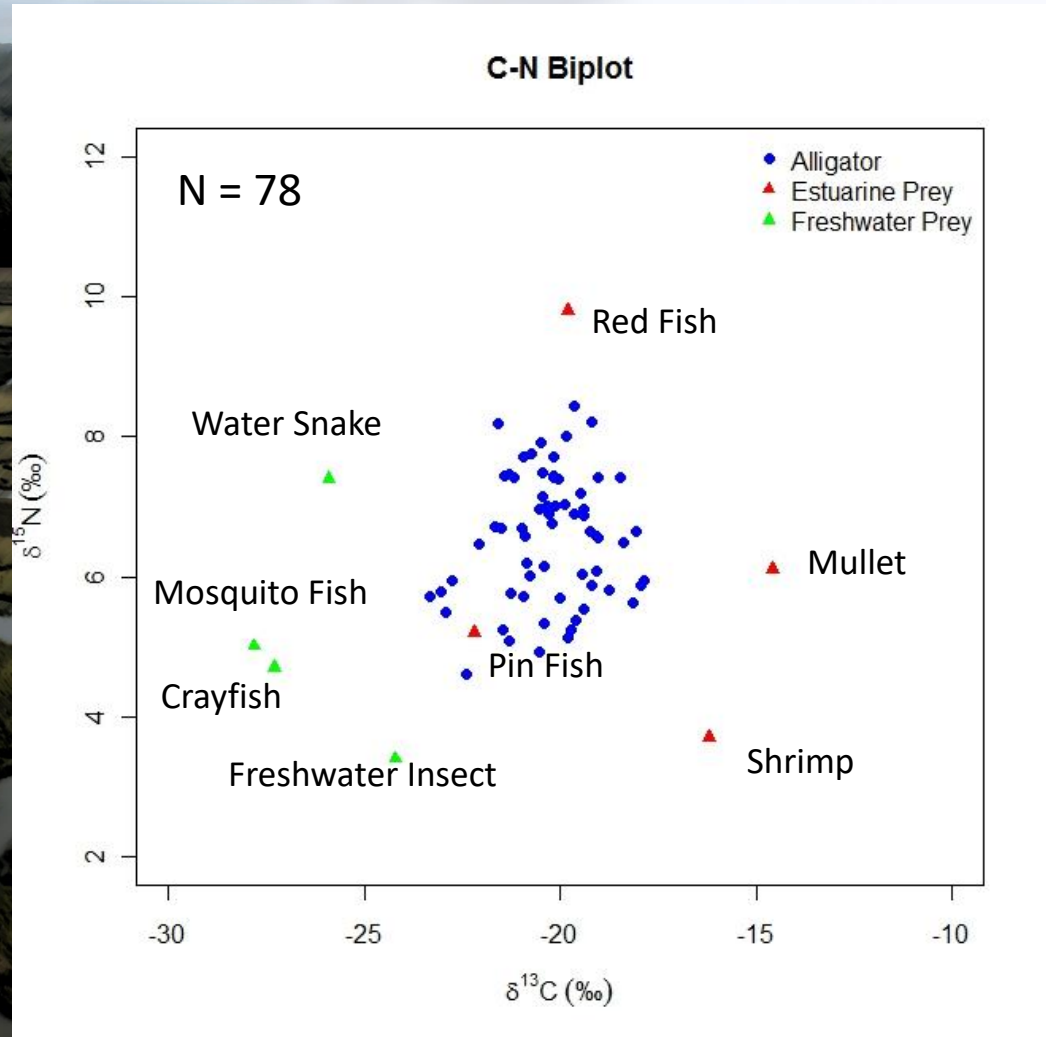


To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?

2010 and 2011



Captures = 78



Freshwater ← Habitat → Estuarine

To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?

- Stomach content analysis
 - Snapshot assessment of food habits
 - Analysis is ongoing (~25 ind. from 2011)



To what degree do American alligators (*Alligator mississippiensis*) use estuarine food resources and habitat?

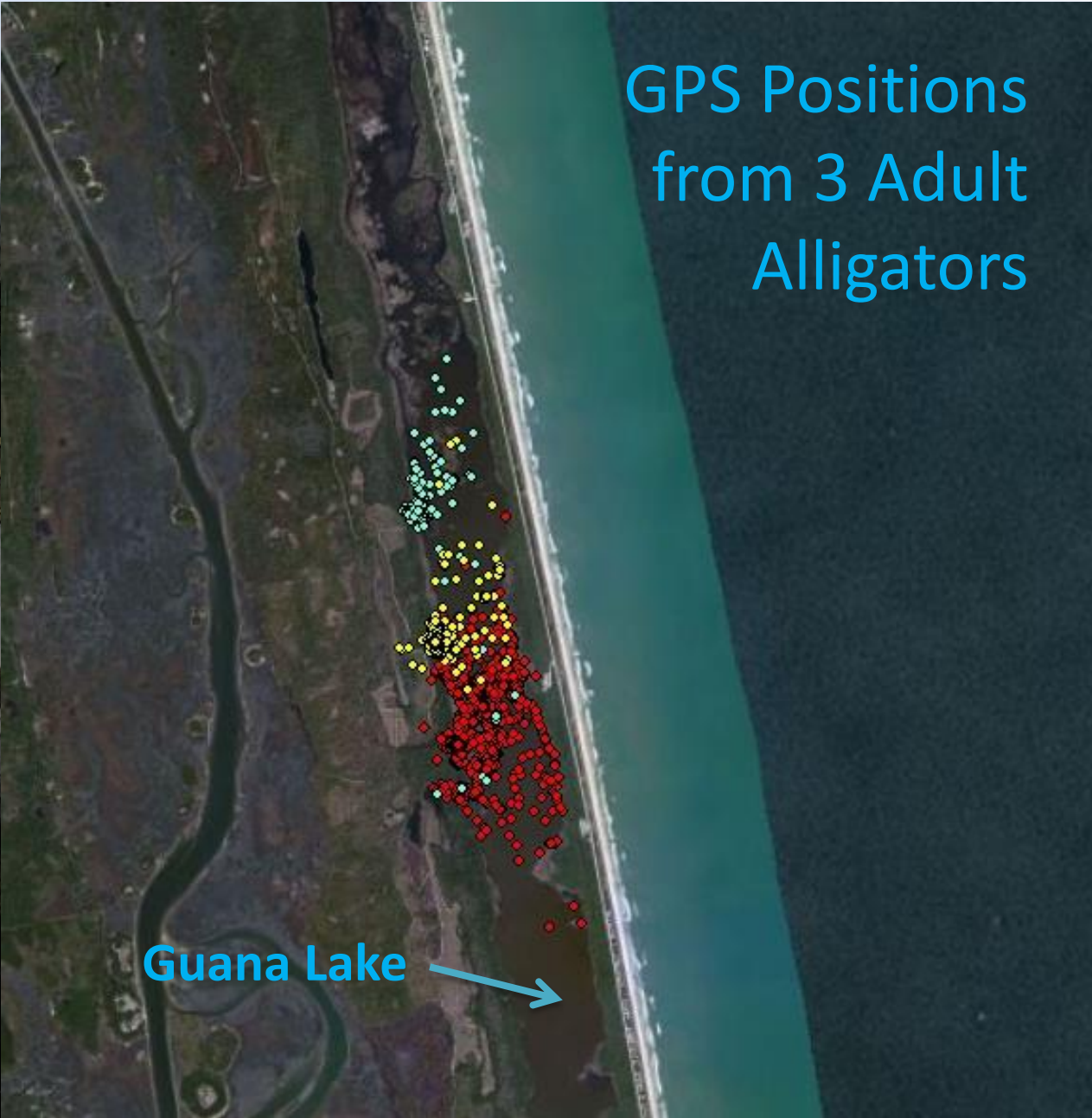
- GPS Telemetry

- Units attempt to acquire positional information every 1 hour
- Units are deployed up to 6 months
- Deployed 3 units in 2011

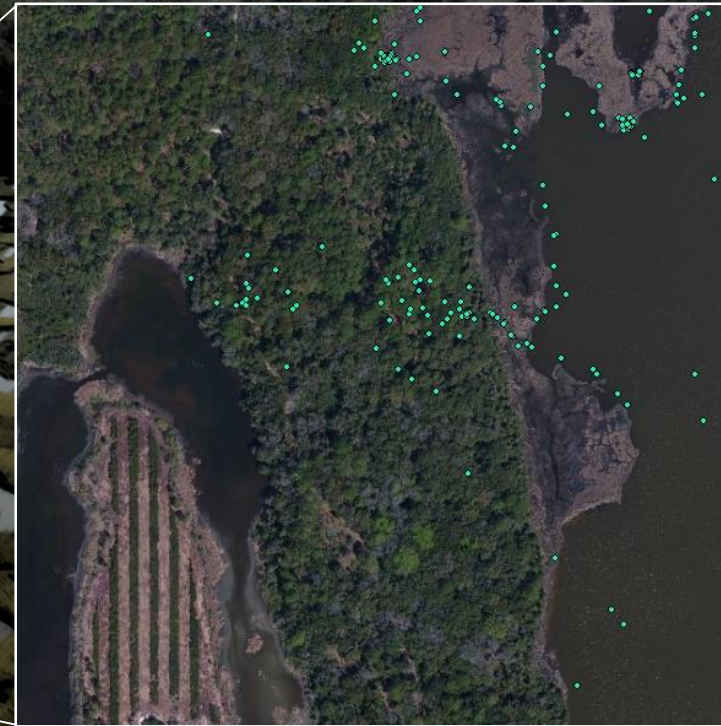


GPS Positions
from 3 Adult
Alligators

Guana Lake



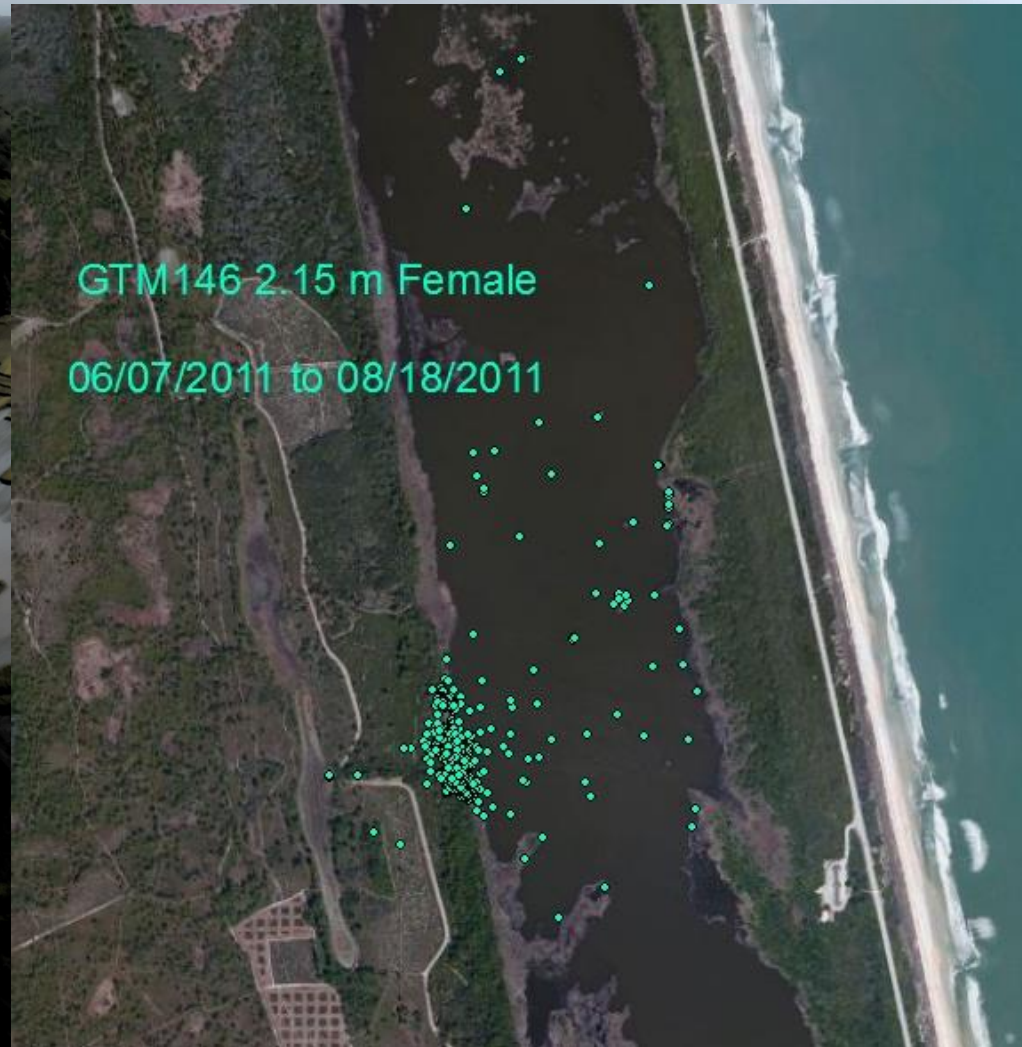
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What are their movement patterns in estuarine habitats?

- From GPS data:
 - Alligators maintain relatively small home ranges, compared to other coastal localities
 - Competition
 - Mainly use edge habitat (<20 m from shore)
 - Specialized foraging
 - Maintain close proximity to associated den areas
 - Territoriality
 - Travel to upland freshwater wetlands infrequently

Do alligators form a functional link between Guana Lake and interior freshwater wetlands?

- All 3 individuals tracked, traveled to freshwater wetlands at least 1 time
 - Infrequent
- Individuals may be acquiring freshwater from periphery of Guana Lake
- Need more data!!



Additional Activities and Side Projects



Research at the Whitney Lab

Additional Activities and Side Projects

SUPER FREAKS
OF NATURE

James C. Nifong
University of Florida
Alligator specialist

Discovery/ Science Channel filming



Additional Activities and Side Projects



Film shoot with Larry the Cable Guy for History Channel's – *Only In America*

Additional Activities and Side Projects



National Geographic Critter-cams

-Deployed 6 units within Guana Lake in 2011

Additional Activities and Side Projects

Notes of the *Southeastern Naturalist*, Issue 10/3, 2011

First Record of the American Alligator (*Alligator mississippiensis*) as a Host to the Sea Turtle Barnacle (*Chelonibia testudinaria*)

James C. Nifong^{1,*} and Michael G. Frick²

Abstract - *Chelonibia testudinaria* (Sea Turtle Barnacle) and other closely related barnacle species of the genus *Chelonibia* are known to utilize a variety of organisms for their attachment substrate. These include the calcified exoskeleton of marine crustaceans and chelicerids, the epidermis of manatees, and the carapace regions of all extant sea turtle species. Here, we present the first records of an *Alligator mississippiensis* (American Alligator; Alligatoridae) as a host for *C. testudinaria*.



Additional Activities and Side Projects

Herpetological Review, 2011, 42(4), 511–513.
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Putative Predation and Scavenging of Two Sea Turtle Species by the American Alligator, *Alligator mississippiensis*, in Coastal Southeastern United States

The food habits of the American Alligator (*Alligator mississippiensis*) are well documented in many freshwater systems (salinity <5 ppt) throughout its native range (Barr 1997; Delany and Abercrombie 1986; Gabrey 2010; Rice 2004). In marine (salinity >25 ppt) and estuarine (variable salinity between 5 ppt and 25 ppt) habitats, however, the dietary interactions and food habits of *A. mississippiensis* have received little attention by researchers; limited data exist from Louisiana (Gabrey 2010; McNease and Joanen 1977; Wheatley 2010), Wassaw Island, Georgia (Tamarack 1988, 1993), and Cumberland Island, Georgia (Shoop and Ruckdeschel 1990). To date, no comparative analysis among marine or estuarine populations has been performed. The aforementioned studies indicate that *A. mississippiensis* foraging in marine and estuarine environments consume a variety of prey items including crustaceans (e.g., blue crab, shrimp, crayfish), horseshoe crab, teleost fishes (e.g., mullet, gar, shad, top-minnow), small mammals (e.g., nutria, raccoon, mink), and mul-

Given the size and spacing of the puncture wounds in the *C. mydas* carapace, we estimate that the *A. mississippiensis* involved was approximately 2 m TL. Additionally, markings on the turtle carapace indicate that the *A. mississippiensis* adjusted and manipulated the prey item in its mouth in an attempt to break up and swallow the *C. mydas* (Fig. 1).

Four observations of dead *C. caretta* being scavenged by *A. mississippiensis* were made on three separate Georgia barrier islands during ongoing sea turtle nesting surveys sponsored by the Georgia Department of Natural Resources (GADNR) and the U.S. Fish and Wildlife Service (USFWS). The most recent of these observations occurred at 2011 h on 10 May 1999. Caretta Research Project (CRP) composed of straight plastic cm, GADNR end of Wass-



Nifong, J.C., Frick, M., and Eastman S. 2011

How to get involved

- Volunteer in the field
- Donate \$\$
 - University of Florida Foundation Inc.
 - Alligator Research Fund
- Contact: ncboy@ufl.edu

Acknowledgements

Funding

NOAA Graduate Research Fellowship GTM

Sigma-Xi

University of Florida Inc.

Stolarz Foundation

National Science Foundation

Volunteers and Others

Rachel Douglass

Matt Welsh

Samantha Sammons

Jake Fitzroy

Joe Burgess

Justin Ellenberger

Taylor Mosteller

Louis Guillette Jr.

